

Office Action Summary

Application No
09/270,606

Applicant(s)
Evans

Examiner
Matt Anderson

Group Art Unit
1765



☒ Responsive to communication(s) filed on 3/17/00

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1035 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

- ☒ Claim(s) 1-9 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-9 is/are rejected.
- Claim(s) _____ is/are objected to.
- Claims _____ are subject to restriction or election requirement.

Application Papers

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- The specification is objected to by the Examiner.
- The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.

received in Application No. (Series Code/Serial Number) _____

received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received _____

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449 Paper No(s) _____
- Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1765

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-6 are rejected under 35 U.S.C. 102(a) as being anticipated by Grover et al. (US 5,759,917).

Grover et al. discloses a method of chemical mechanical polishing (CMP) using a slurry containing cerium oxide (Col. 4 lines 40-45). The slurry also contains an additive (i.e. a modifier) comprised of a carboxylic acid. The method is disclosed as useful for STI (shallow trench isolation). STI is disclosed in Col. 1 lines 25-37 as follows: silicon nitride is deposited over a thermal oxide; a shallow trench is etched; a layer of oxide is deposited over the into the trench; the excess oxide is polished using CMP such that the surface is planar (i.e. the high spots are removed and the low spots are essentially untouched. In Col. 5 lines 60-63 the percentage of the metal oxide abrasive is disclosed as from about 2-25 % by weight. In Col. 7 lines 40-53 is described the methods of the enclosed Examples including the down force of 9 psi.

Art Unit: 1765

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4, 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grover et al. as applied to claims 1-3, 5-6 above, and further in view of Burke et al. (US 5,934,978).

Grover et al. discloses a CMP method using ceria slurry as disclosed above.

Grover et al. does not disclose the use of ethylene glycol in such a slurry.

Burke et al. discloses in Cols. 3 and 4, lines 60+ and 1-9, respectively, the addition of a suspension agent which improves the colloidal behavior of the abrasive particles in deionized water and inhibits the coalescence of the particles. Ethylene glycol is disclosed as a suspension agent. In col. 4 lines 9-15, ceria (i.e. cerium oxide) is disclosed as the abrasive particles in the slurry.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the references cited because Burke et al. brings to Grover a suspension agent (ethylene glycol) that would increase the utility of a ceria-based CMP slurry and such a combination would have been anticipated to produce this expected result.



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

0771745.006 03/17/98 EVANS

1745 SMT-335

INVENTOR: ALMA PATENT COUNSEL
SHARP MICROELECTRONICS TECHNOLOGY INC
5700 NW PACIFIC RIM BOULEVARD
CAMAS WA 98607

TR 12/0707

EXAMINER

ANDERSON, M

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED:

03/27/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Art Unit: 1765

It would have been obvious to one of ordinary skill in the art at the time of the present invention to optimize the amount of ethylene glycol in such a slurry because the addition of ethylene glycol in a ceria-containing CMP slurry to affect the suspension and ultimately the polishing of the slurry was known, such optimization would have been anticipated to produce an expected result, and such optimization would have been achieved with only routine experimentation.

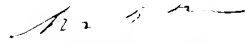
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt Anderson whose telephone number is (703) 308-0086. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are not successful, the examiner's supervisor, Benjamin Utech, can be reached at (703) 308-3836.

Any inquiry of a general nature can be directed to the group receptionist whose telephone number is (703) 308-0661.

MAA

March 23, 2000


BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700